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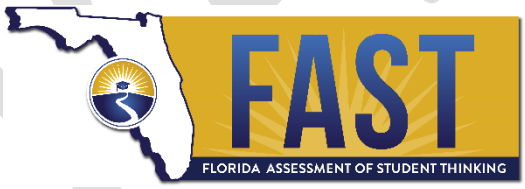
Grade 5 Mathematics Test Item Specifications



INTENDED FOR TEST ITEM WRITERS AND REVIEWERS FOR FLORIDA'S STATEWIDE ASSESSMENTS. NOT FOR INSTRUCTIONAL USE.

The contents of these draft *Test Item Specifications (Specifications)* are based on the benchmarks provided in Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards. The *Specifications* define the content and format of the tests and test items and indicate the alignment of items with the benchmarks for test item writers and reviewers. **The *Specifications* are not intended for instructional use.**

With the adoption of Florida's B.E.S.T. Standards for ELA and Mathematics, the following comprehensive resource has been developed to support educators.

- Within the standards, **benchmark clarifications** provide helpful information for educators to understand and to implement each standard.

Given the availability of B.E.S.T. resources, and to prevent any misuse of the *Specifications* by educators, item specifications for ELA and Mathematics assessments aligned to the B.E.S.T. Standards will be reserved for their intended purpose of guiding item writers and reviewers. B.E.S.T. Standards implementation should be driven by the instructional support provided by the Just Read, Florida! Office (JRF) and the Bureau of Standards and Instructional Support (BSIS) to ensure that the focus remains on the content and skills students will engage with in the classroom.

Origin of the Specifications

The Florida Department of Education convened committees of Florida educators to help develop and approve the specifications documents.

Technology-Enhanced Item Descriptions

The Florida B.E.S.T. Standards Assessments are composed of test items that include traditional multiple-choice items as well as enhanced items that require students to select and/or support their answers.

The various enhanced item types are described below.

- **Technology-Enhanced Item Types—Mathematics**
  - **Editing Task Choice**—The student clicks a drop-down menu containing options to complete an equation or expression, a statement, or other component. The student then selects the correct response from the drop-down menu. For paper-based assessments, this item type is modified; the student fills in a bubble to indicate a selection.
  - **Selectable Hot Text**—The student is directed to click on one or more correct answers from among a number of options. When the student hovers over the options (e.g., phrases, sentences, numbers, or expressions), the text will highlight. This indicates that the text is selectable ("hot"). The options may be presented in various ways (e.g., as a list, embedded within text, or in a table). The student can then click on an option to select it. For paper-based assessments, this item type is modified; the student fills in a bubble to indicate a selection.
  - **Multiselect**—The student is directed to select all the correct answers from among a number of options. These items are different from Multiple Choice items, which allow the student to select only one correct answer. These items appear in the online and paper-based assessments.
  - **Graphic Response Item Display (GRID)**—The student uses the point, line, or arrow tools to create a response on a graph. The item type may also require the student to select numbers, words, phrases, or images and use the drag-and-drop feature to place them into a graphic. For paper-based assessments, this item type will be replaced with another item type.
  - **Equation Editor**—The student enters a number, variable, expression, or equation, as appropriate to the test item, in a response box. The student is presented with a toolbar that includes a variety of mathematical symbols that can be used to create a response. The response box may be separate from the text of the item, or it may be embedded within text of the item (e.g., in line with a sentence or within a table). For paper-based assessments, this item type is modified; the student writes a response in the response box.
  - **Matching Item**—The student checks a box to indicate whether information from a column header matches information from a row. The number of correct answer options per row or column may vary. These items appear in the online and paper-based assessments.

Any of the item types may be combined into a single item with multiple parts called a multi-interaction item. The student will interact with different item types within a single item. Each part could be a different item type. For paper-based assessments, different item types (multiple choice, multiselect, editing task choice, selectable hot text, matching, and equation editor) may be combined into a single item.

Item Specifications Definitions

- **Assessment Limits** define the range of content knowledge and degree of difficulty that should be assessed in the assessment items for the benchmark(s).
- **Meaning of Also Assesses**—Where mastery of overlapping mathematical skills of associated benchmark(s) could be assessed through primary benchmark(s).
- **Calculator Availability**
  The following chart displays the type of calculator that is available for each grade or course B.E.S.T. Assessment. Note: For grades 6, 7, 8, Algebra 1, and Geometry, calculators are available for the entire assessment.

Grade/Course	Calculator
3, 4, 5	None
6	Basic four-function
7, 8	Desmos scientific
Algebra 1, Geometry	Desmos scientific

  - **Calculator Designations**
    - **None**—Items for this benchmark **may not** allow for the availability of a calculator.
    - **Available**—Items for this benchmark **must** allow for the availability of a calculator.

- **Context Designations**
  Any item could include justifying and error analysis through reasoning.
  - **Real-world**—authentic application of mathematics to real-world situations
  - **Mathematical**—using models, equations, or evaluation of mathematical reasoning in the absence of a real-world context
  - **Both**—items could either use a real-world context or be strictly mathematical

Number Sense and Operations

MA.5.NSO.1	***Understand the place value of multi-digit numbers with decimals to the thousandths place.***
MA.5.NSO.1.1	Express how the value of a digit in a multi-digit number with decimals to the thousandths changes if the digit moves one or more places to the left or right.
Benchmark Clarifications	
Context	Mathematical
Calculator	None
Assessment Limits	N/A

MA.5.NSO.1	***Understand the place value of multi-digit numbers with decimals to the thousandths place.***
MA.5.NSO.1.2	Read and write multi-digit numbers with decimals to the thousandths using standard form, word form and expanded form. *Example:* The number sixty-seven and three hundredths written in standard form is 67.03 and in expanded form is 60 + 7 + 0.03 or $(6 \times 10) + (7 \times 1) + (3 \times \frac{1}{100})$.
Benchmark Clarifications	
Context	Mathematical
Calculator	None
Assessment Limits	Items that require the use of standard form for numbers including decimal notation will use the language “standard decimal form.” Numbers will have a maximum of six significant digits.

MA.5.NSO.1	***Understand the place value of multi-digit numbers with decimals to the thousandths place.***
MA.5.NSO.1.3	Compose and decompose multi-digit numbers with decimals to the thousandths in multiple ways using the values of the digits in each place. Demonstrate the compositions or decompositions using objects, drawings and expressions or equations. *Example:* The number 20.107 can be expressed as 2 $tens$ + 1 $tenth$ + 7 $thousandths$ or as 20 + 107 $thousandths$.
Benchmark Clarifications	
Context	Mathematical
Calculator	None
Assessment Limits	Numbers will have a maximum of six significant digits.

MA.5.NSO.1	***Understand the place value of multi-digit numbers with decimals to the thousandths place.***
MA.5.NSO.1.4	Plot, order and compare multi-digit numbers with decimals up to the thousandths. *Example:* The numbers 4.891; 4.918 and 4.198 can be arranged in ascending order as 4.198; 4.891 and 4.918. *Example:* 0.15 < 0.2 because $fifteen\ hundredths$ is less than $twenty\ hundredths$, which is the same as $two\ tenths$.
Benchmark Clarifications	*Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of digits. *Clarification 2:* Scaled number lines must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
Context	Mathematical
Calculator	None
Assessment Limits	Items must include at least one multi-digit number with decimals to the thousandths. Items using relational symbols are limited to two multi-digit numbers. Items involving comparison may use relational words but must use relational symbols.

MA.5.NSO.1	***Understand the place value of multi-digit numbers with decimals to the thousandths place.***
MA.5.NSO.1.5	Round multi-digit numbers with decimals to the thousandths to the nearest hundredth, tenth or whole number. *Example:* The number 18.507 rounded to the nearest tenth is 18.5 and to the nearest hundredth is 18.51.
Benchmark Clarifications	
Context	Mathematical
Calculator	None
Assessment Limits	N/A

MA.5.NSO.2	***Add, subtract, multiply and divide multi-digit numbers.***
MA.5.NSO.2.1	Multiply multi-digit whole numbers including using a standard algorithm with procedural fluency.
Benchmark Clarifications	
Context	Mathematical
Calculator	None
Assessment Limits	Multiplication limited to 3 by 3 digits, 4 by 2 digits, 4 by 3 digits, or 5 by 2 digits.

MA.5.NSO.2	***Add, subtract, multiply and divide multi-digit numbers.***
MA.5.NSO.2.2	Divide multi-digit whole numbers, up to five digits by two digits, including using a standard algorithm with procedural fluency. Represent remainders as fractions. *Example:* The quotient 27 ÷ 7 is 3 with remainder 6 which can be expressed as $3\frac{6}{7}$.
Benchmark Clarifications	*Clarification 1:* Within this benchmark, the expectation is not to use simplest form for fractions.
Context	Mathematical
Calculator	None
Assessment Limits	Items containing a divisor with one digit must have a dividend with five digits. Items may include whole number quotients.

MA.5.NSO.2	***Add, subtract, multiply and divide multi-digit numbers.***
MA.5.NSO.2.3	Add and subtract multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency.
Benchmark Clarifications	
Context	Mathematical
Calculator	None
Assessment Limits	Items must contain at least one multi-digit number with a decimal to the thousandths.

MA.5.NSO.2	***Add, subtract, multiply and divide multi-digit numbers.***
MA.5.NSO.2.5	Multiply and divide a multi-digit number with decimals to the tenths by one-tenth and one-hundredth with procedural reliability. *Example:* The number 12.3 divided by 0.01 can be thought of as ? × 0.01 = 12.3 to determine the quotient is 1,230.
Benchmark Clarifications	*Clarification 1:* Instruction focuses on the place value of the digit when multiplying or dividing.
Also Assesses	
MA.5.NSO.2.4	Explore the multiplication and division of multi-digit numbers with decimals to the hundredths using estimation, rounding and place value. *Example:* The quotient of 23 and 0.42 can be estimated as a little bigger than 46 because 0.42 is less than one-half and 23 times 2 is 46.
Benchmark Clarifications	*Clarification 1:* Estimating quotients builds the foundation for division using a standard algorithm. *Clarification 2:* Instruction includes the use of models based on place value and the properties of operations.
Context	Mathematical
Calculator	None
Assessment Limits	N/A

Fractions

MA.5.FR.1	***Interpret a fraction as an answer to a division problem.***
MA.5.FR.1.1	Given a mathematical or real-world problem, represent the division of two whole numbers as a fraction. *Example:* At Shawn's birthday party, a two-gallon container of lemonade is shared equally among 20 friends. Each friend will have $\frac{2}{20}$ of a gallon of lemonade which is equivalent to one-tenth of a gallon which is a little more than 12 ounces.
Benchmark Clarifications	*Clarification 1:* Instruction includes making a connection between fractions and division by understanding that fractions can also represent division of a numerator by a denominator. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Fractions can include fractions greater than one.
Context	Both
Calculator	None
Assessment Limits	N/A

MA.5.FR.2	***Perform operations with fractions.***
MA.5.FR.2.1	Add and subtract fractions with unlike denominators, including mixed numbers and fractions greater than 1, with procedural reliability. *Example:* The sum of $\frac{1}{12}$ and $\frac{1}{24}$ can be determined as $\frac{1}{8}, \frac{3}{24}, \frac{6}{48}$ *or* $\frac{36}{288}$ by using different common denominators or equivalent fractions.
Benchmark Clarifications	*Clarification 1:* Instruction includes the use of estimation, manipulatives, drawings or the properties of operations. *Clarification 2:* Instruction builds on the understanding from previous grades of factors up to 12 and their multiples.
Context	Mathematical
Calculator	None
Assessment Limits	Items may not use the terms "simplify" or "lowest terms." Numerical expressions or equations must be provided without models.

MA.5.FR.2	***Perform operations with fractions.***
MA.5.FR.2.2	Extend previous understanding of multiplication to multiply a fraction by a fraction, including mixed numbers and fractions greater than 1, with procedural reliability.
Benchmark Clarifications	*Clarification 1:* Instruction includes the use of manipulatives, drawings or the properties of operations. *Clarification 2:* Denominators limited to whole numbers up to 20.
Context	Mathematical
Calculator	None
Assessment Limits	Items may not use the terms “simplify” or “lowest terms.” Numerical expressions or equations must be given without models.

MA.5.FR.2	***Perform operations with fractions.***
MA.5.FR.2.3	When multiplying a given number by a fraction less than 1 or a fraction greater than 1, predict and explain the relative size of the product to the given number without calculating.
Benchmark Clarifications	*Clarification 1:* Instruction focuses on the connection to decimals, estimation and assessing the reasonableness of an answer.
Context	Both
Calculator	None
Assessment Limits	N/A

MA.5.FR.2	***Perform operations with fractions.***
MA.5.FR.2.4	Extend previous understanding of division to explore the division of a unit fraction by a whole number and a whole number by a unit fraction.
Benchmark Clarifications	*Clarification 1:* Instruction includes the use of manipulatives, drawings or the properties of operations. *Clarification 2:* Refer to Situations Involving Operations with Numbers (Appendix A).
Context	Both
Calculator	None
Assessment Limits	Items may not use the terms “simplify” or “lowest terms.” Numerical expressions or equations must be given without models. Real-word problems will not require solving.

Algebraic Reasoning

MA.5.AR.1	***Solve problems involving the four operations with whole numbers and fractions.***
MA.5.AR.1.1	Solve multi-step real-world problems involving any combination of the four operations with whole numbers, including problems in which remainders must be interpreted within the context.
Benchmark Clarifications	*Clarification 1:* Depending on the context, the solution of a division problem with a remainder may be the whole number part of the quotient, the whole number part of the quotient with the remainder, the whole number part of the quotient plus 1, or the remainder.
Context	Real-world
Calculator	None
Assessment Limits	Items using multiplication will have a product that does not exceed six digits. Items using division will be up to five digits by up to two digits.

MA.5.AR.1	***Solve problems involving the four operations with whole numbers and fractions.***
MA.5.AR.1.2	Solve real-world problems involving the addition, subtraction or multiplication of fractions, including mixed numbers and fractions greater than 1. *Example:* Shanice had a sleepover and her mom is making French toast in the morning. If her mom had $2\frac{1}{4}$ loaves of bread and used $1\frac{1}{2}$ loaves for the French toast, how much bread does she have left?
Benchmark Clarifications	*Clarification 1:* Instruction includes the use of visual models and equations to represent the problem.
Context	Real-world
Calculator	None
Assessment Limits	Items requiring addition or subtraction must include denominators using unlike whole numbers. Items requiring multiplication must include denominators using whole numbers up to 20.

MA.5.AR.1	***Solve problems involving the four operations with whole numbers and fractions.***
MA.5.AR.1.3	Solve real-world problems involving division of a unit fraction by a whole number and a whole number by a unit fraction. *Example:* A property has a total of $\frac{1}{2}$ acre and needs to be divided equally among 3 sisters. Each sister will receive $\frac{1}{6}$ of an acre. *Example:* Kiki has 10 candy bars and plans to give $\frac{1}{4}$ of a candy bar to her classmates at school. How many classmates will receive a piece of a candy bar?
Benchmark Clarifications	*Clarification 1:* Instruction includes the use of visual models and equations to represent the problem.
Context	Real-world
Calculator	None
Assessment Limits	Unit fractions will have denominators limited to 1–10, 12, 16, 20, 50, and 100.

MA.5.AR.2	***Demonstrate an understanding of equality, the order of operations and equivalent numerical expressions.***
MA.5.AR.2.1	Translate written real-world and mathematical descriptions into numerical expressions and numerical expressions into written mathematical descriptions. *Example:* The expression 4.5 + (3 × 2) in word form is $four\ and\ five\ tenths$ plus the quantity 3 times 2.
Benchmark Clarifications	*Clarification 1:* Expressions are limited to any combination of the arithmetic operations, including parentheses, with whole numbers, decimals and fractions. *Clarification 2:* Within this benchmark, the expectation is not to include exponents or nested grouping symbols.
Context	Both
Calculator	None
Assessment Limits	Items containing fractions will not include decimals. Items containing decimals will not include fractions. Expressions will not exceed three operations. Denominators will be limited to 1–10, 12, 16, 20, 50, and 100.

MA.5.AR.2	***Demonstrate an understanding of equality, the order of operations and equivalent numerical expressions.***
MA.5.AR.2.2	Evaluate multi-step numerical expressions using order of operations. *Example:* Patti says the expression 12 ÷ 2 × 3 is equivalent to 18 because she works each operation from left to right. Gladys says the expression 12 ÷ 2 × 3 is equivalent to 2 because first multiplies 2 × 3 then divides 6 into 12. David says that Patti is correctly using order of operations and suggests that if parentheses were added, it would give more clarity.
Benchmark Clarifications	*Clarification 1:* Multi-step expressions are limited to any combination of arithmetic operations, including parentheses, with whole numbers, decimals and fractions. *Clarification 2:* Within this benchmark, the expectation is not to include exponents or nested grouping symbols. *Clarification 3:* Decimals are limited to hundredths. Expressions cannot include division of a fraction by a fraction.
Context	Mathematical
Calculator	None
Assessment Limits	Items containing fractions will not include decimals. Items containing decimals will not include fractions. Expressions will not exceed three operations. Denominators will be limited to 1–10, 12, 16, 20, 50, and 100.

MA.5.AR.2	***Demonstrate an understanding of equality, the order of operations and equivalent numerical expressions.***
MA.5.AR.2.3	Determine and explain whether an equation involving any of the four operations is true or false. *Example:* The equation 2.5 + (6 × 2) = 16 − 1.5 can be determined to be true because the expression on both sides of the equal sign are equivalent to 14.5.
Benchmark Clarifications	*Clarification 1:* Problem types include equations that include parenthesis but not nested parentheses. *Clarification 2:* Instruction focuses on the connection between properties of equality and order of operations.
Context	Mathematical
Calculator	None
Assessment Limits	Items including decimals will not include fractions. Items including fractions will not include decimals. Items will include at least two different arithmetic operations on at least one side of the equation. Items will not exceed three operations on either side of the equation.

MA.5.AR.2	***Demonstrate an understanding of equality, the order of operations and equivalent numerical expressions.***
MA.5.AR.2.4	Given a mathematical or real-world context, write an equation involving any of the four operations to determine the unknown whole number with the unknown in any position. *Example:* The equation 250 − (5 × s) = 15 can be used to represent that 5 sheets of paper are given to s students from a pack of paper containing 250 sheets with 15 sheets left over.
Benchmark Clarifications	*Clarification 1:* Instruction extends the development of algebraic thinking where the unknown letter is recognized as a variable. *Clarification 2:* Problems include the unknown and different operations on either side of the equal sign.
Context	Both
Calculator	None
Assessment Limits	Items including one procedural step involving multiplication or division will not include factors within 12 and related division facts. Items must not use coefficients to represent multiplication. Items may require the student to only determine the equation or to determine the equation and solve for the unknown whole number.

MA.5.AR.3	***Analyze patterns and relationships between inputs and outputs.***
MA.5.AR.3.1	Given a numerical pattern, identify and write a rule that can describe the pattern as an expression. *Example:* The given pattern 6, 8, 10, 12 … can be describe using the expression 4 + 2x, where x = 1, 2, 3, 4 …; the expression 6 + 2x, where x = 0, 1, 2, 3 … or the expression 2x, where x = 3, 4, 5, 6 ….
Benchmark Clarifications	*Clarification 1:* Rules are limited to one or two operations using whole numbers.
Context	Mathematical
Calculator	None
Assessment Limits	Items may use coefficients to represent multiplication.

<table>
<tr><td>MA.5.AR.3</td><td>Analyze patterns and relationships between inputs and outputs.</td></tr>
<tr><td>MA.5.AR.3.2</td><td>Given a rule for a numerical pattern, use a two-column table to record the inputs and outputs.
Example: The expression 6 + 2x, where x represents any whole number, can be represented in a two-column table as shown below.
<table>
<tr><td>Input (x)</td><td>0</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Output</td><td>6</td><td>8</td><td>10</td><td>12</td></tr>
</table></td></tr>
<tr><td>Benchmark Clarifications</td><td>Clarification 1: Instruction builds a foundation for proportional and linear relationships in later grades.
Clarification 2: Rules are limited to one or two operations using whole numbers.</td></tr>
<tr><td>Context</td><td>Mathematical</td></tr>
<tr><td>Calculator</td><td>None</td></tr>
<tr><td>Assessment Limits</td><td>Items may use coefficients to represent multiplication.
Two-column tables can be configured vertically or horizontally.</td></tr>
</table>

Measurement

MA.5.M.1	***Convert measurement units to solve multi-step problems.***
MA.5.M.1.1	Solve multi-step real-world problems that involve converting measurement units to equivalent measurements within a single system of measurement. *Example:* There are 60 minutes in 1 hour, 24 hours in 1 day and 7 days in 1 week. So, there are 60 × 24 × 7 minutes in one week which is equivalent to 10,080 minutes.
Benchmark Clarifications	*Clarification 1:* Within the benchmark, the expectation is not to memorize the conversions. *Clarification 2:* Conversions include length, time, volume and capacity represented as whole numbers, fractions and decimals.
Context	Real-world
Calculator	None
Assessment Limits	Items including decimals will not include fractions. Items including fractions will not include decimals. Decimals are limited to the thousandths place. Items including one procedural conversion must include a decimal, the use of tons, the use of days, or the use of weeks.

MA.5.M.2	***Solve problems involving money.***
MA.5.M.2.1	Solve multi-step real-world problems involving money using decimal notation. *Example:* Don is at the store and wants to buy soda. Which option would be cheaper: buying one 24-ounce can of soda for $1.39 or buying two 12-ounce cans of soda for 69¢ each?
Benchmark Clarifications	
Context	Real-world
Calculator	None
Assessment Limits	Items involving only addition and subtraction are limited to at least three procedural steps.

Geometric Reasoning

MA.5.GR.1	***Classify two-dimensional figures and three-dimensional figures based on defining attributes.***
MA.5.GR.1.1	Classify triangles or quadrilaterals into different categories based on shared defining attributes. Explain why a triangle or quadrilateral would or would not belong to a category.
Benchmark Clarifications	*Clarification 1:* Triangles include scalene, isosceles, equilateral, acute, obtuse and right; quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids.
Context	Mathematical
Calculator	None
Assessment Limits	Right angles will have the right angle marker. Items with two-dimensional figures will not include hatch marks representing sides of equal lengths, arcs representing angles of equal measure, or arrows to indicate parallel lines/sides.

MA.5.GR.1	***Classify two-dimensional figures and three-dimensional figures based on defining attributes.***
MA.5.GR.1.2	Identify and classify three-dimensional figures into categories based on their defining attributes. Figures are limited to right pyramids, right prisms, right circular cylinders, right circular cones and spheres.
Benchmark Clarifications	*Clarification 1:* Defining attributes include the number and shape of faces, number and shape of bases, whether or not there is an apex, curved or straight edges and curved or flat faces.
Context	Mathematical
Calculator	None
Assessment Limits	N/A

MA.5.GR.2	***Find the perimeter and area of rectangles with fractional or decimal side lengths.***
MA.5.GR.2.1	Find the perimeter and area of a rectangle with fractional or decimal side lengths using visual models and formulas.
Benchmark Clarifications	*Clarification 1:* Instruction includes finding the area of a rectangle with fractional side lengths by tiling it with squares having unit fraction side lengths and showing that the area is the same as would be found by multiplying the side lengths. *Clarification 2:* Responses must include the appropriate units in word form.
Context	Both
Calculator	None
Assessment Limits	Items will require the students to find the perimeter, the area, or both. Items including decimals will not include fractions. Items including fractions will not include decimals. Measuring units will not have exponents (cm^2, etc.).

MA.5.GR.3	***Solve problems involving the volume of right rectangular prisms.***
MA.5.GR.3.1	Explore volume as an attribute of three-dimensional figures by packing them with unit cubes without gaps. Find the volume of a right rectangular prism with whole-number side lengths by counting unit cubes.
Benchmark Clarifications	*Clarification 1:* Instruction emphasizes the conceptual understanding that volume is an attribute that can be measured for a three-dimensional figure. The measurement unit for volume is the volume of a unit cube, which is a cube with edge length of 1 unit.
Context	Both
Calculator	None
Assessment Limits	Figures may only be shown with unit cubes. Items requiring measurement of volume by counting unit cubes must provide a key of the cubic unit. Items must contain a graphic of the figure. Measuring units will not have exponents (cm^3, etc.).

MA.5.GR.3	***Solve problems involving the volume of right rectangular prisms.***
MA.5.GR.3.2	Find the volume of a right rectangular prism with whole-number side lengths using a visual model and a formula.
Benchmark Clarifications	*Clarification 1:* Instruction includes finding the volume of right rectangular prisms by packing the figure with unit cubes, using a visual model or applying a multiplication formula. *Clarification 2:* Right rectangular prisms cannot exceed two-digit edge lengths and responses must include the appropriate units in word form.
Context	Mathematical
Calculator	None
Assessment Limits	Items must contain a graphic of the figure. Items will not determine the measure of an unknown side.

MA.5.GR.3	***Solve problems involving the volume of right rectangular prisms.***
MA.5.GR.3.3	Solve real-world problems involving the volume of right rectangular prisms, including problems with an unknown edge length, with whole-number edge lengths using a visual model or a formula. Write an equation with a variable for the unknown to represent the problem. *Example:* A hydroponic box, which is a rectangular prism, is used to grow a garden in wastewater rather than soil. It has a base of 2 feet by 3 feet. If the volume of the box is 12 cubic feet, what would be the depth of the box?
Benchmark Clarifications	*Clarification 1:* Instruction progresses from right rectangular prisms to composite figures composed of right rectangular prisms. *Clarification 2:* When finding the volume of composite figures composed of right rectangular prisms, recognize volume as additive by adding the volume of non-overlapping parts. *Clarification 3:* Responses must include the appropriate units in word form.
Context	Real-world
Calculator	None
Assessment Limits	Items involving composite shapes must contain a graphic of the figures. Items involving composite shapes may contain no more than two non-overlapping prisms. Non-overlapping means that two prisms may share a face, but they do not share the same volume. Measuring units will not have exponents (cm^3, etc.).

MA.5.GR.4	***Plot points and represent problems on the coordinate plane.***
MA.5.GR.4.1	Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane.
Benchmark Clarifications	*Clarification 1:* Instruction includes the connection between two-column tables and coordinates on a coordinate plane. *Clarification 2:* Instruction focuses on the connection of the number line to the x- and y-axis. *Clarification 3:* Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.
Context	Mathematical
Calculator	None
Assessment Limits	Items may not require directions between two given points.

MA.5.GR.4	***Plot points and represent problems on the coordinate plane.***
MA.5.GR.4.2	Represent mathematical and real-world problems by plotting points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation. *Example:* For Kevin's science fair project, he is growing plants with different soils. He plotted the point (5, 7) for one of his plants to indicate that the plant grew 7 inches by the end of week 5.
Benchmark Clarifications	*Clarification 1:* Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.
Context	Both
Calculator	None
Assessment Limits	N/A

Data Analysis and Probability

MA.5.DP.1	***Collect, represent and interpret data and find the mean, mode, median or range of a data set.***
MA.5.DP.1.1	Collect and represent numerical data, including fractional and decimal values, using tables, line graphs or line plots. *Example:* Gloria is keeping track of her money every week. She starts with $10.00, after one week she has $7.50, after two weeks she has $12.00 and after three weeks she has $6.25. Represent the amount of money she has using a line graph.
Benchmark Clarifications	*Clarification 1:* Within this benchmark, the expectation is for an estimation of fractional and decimal heights on line graphs. *Clarification 2:* Decimal values are limited to hundredths. Denominators are limited to 1, 2, 3 and 4. Fractions can be greater than one.
Context	Both
Calculator	None
Assessment Limits	Items with numerical data represented in tables or on line plots must include at least one decimal value. Items involving fractions or whole number values must include line graphs. Numerical data sets may be presented in set notation using braces. Items including decimals will not include fractions. Items including fractions will not include decimals.

MA.5.DP.1	***Collect, represent and interpret data and find the mean, mode, median or range of a data set.***
MA.5.DP.1.2	Interpret numerical data, with whole-number values, represented with tables or line plots by determining the mean, mode, median or range. *Example:* Rain was collected and measured daily to the nearest inch for the past week. The recorded amounts are 1, 0, 3, 1, 0, 0 and 1. The range is 3 inches, the modes are 0 and 1 inches and the mean value can be determined as $\frac{1+0+3+1+0+0+1}{7}$ which is equivalent to $\frac{6}{7}$ of an inch. This mean would be the same if it rained $\frac{6}{7}$ of an inch each day.
Benchmark Clarifications	*Clarification 1:* Instruction includes interpreting the mean in real-world problems as a leveling out, a balance point or an equal share.
Context	Both
Calculator	None
Assessment Limits	Items must include finding only the mean or finding the mean and one or more additional statistical measures. Items must present numerical data in tables or line plots.

Appendix A

Grade 5 FAST Mathematics Reference Sheet

Customary Conversions

1 foot = 12 inches
1 yard = 3 feet
1 mile = 5,280 feet
1 mile = 1,760 yards

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts

1 pound = 16 ounces
1 ton = 2,000 pounds

Metric Conversions

1 centimeter = 10 millimeters
1 meter = 100 centimeters
1 meter = 1000 millimeters
1 kilometer = 1000 meters

1 liter = 1000 milliliters

1 gram = 1000 milligrams
1 kilogram = 1000 grams

Time Conversions

1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours
1 week = 7 days

Formulas

Rectangle
$P = l + l + w + w$
$P = 2l + 2w$
$A = l \times w$

Rectangular Prism
$V = l \times w \times h$
or
$V = B \times h$

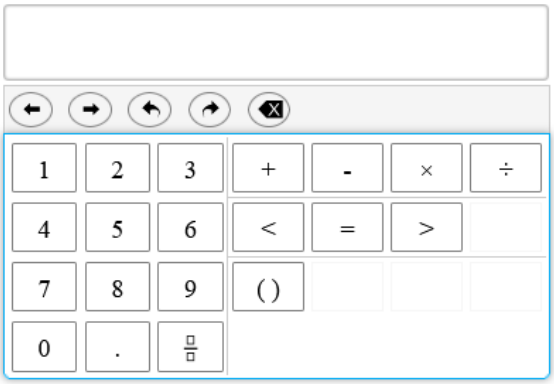
Key	
l = length w = width h = height B = area of the base	P = perimeter A = area V = volume

Appendix B

Keypads for Grade 5 Computer-Based Tests

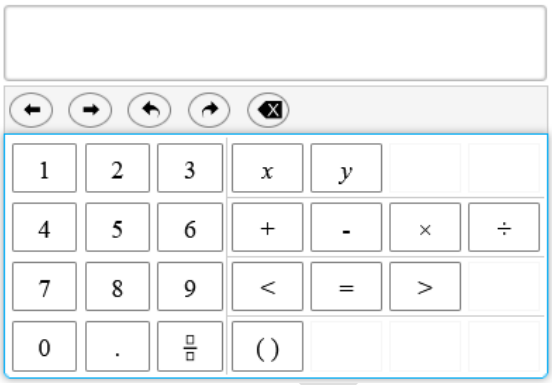
Numeric Only

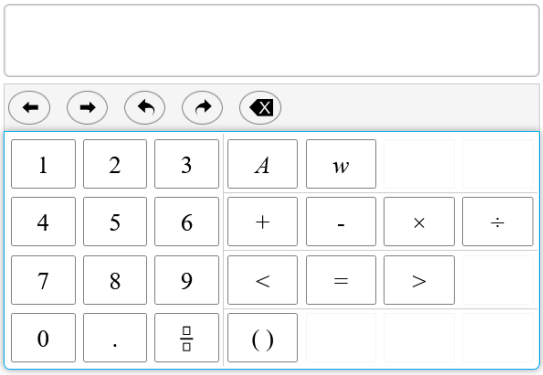
Full Keypad



Full Keypad with Variables:

Variables may change but the rest of the keys are always the same as the full keypad above.





Appendix C: Change Log

Page(s)	Change	Date
5	Updated calculator information	November 2022
1	Added “AND REVIEWERS” after “ITEM WRITERS”	June 2023
3	Removed “of” after “select all” in the multi-select section.	June 2023
25	Added “the” after “same as” in Full Keypad With Variables section. Added period to end of statement.	June 2023
3-4	Updated language to remove “scanned and scored electronically.”	August 2023